























- 1  **CHAPTER 14**
Animals of the Pelagic Environment
- 2  **Chapter summary in haiku form**
Oh, to be a fish
With nary a care at all
Well, being eaten...
- 3  **How to avoid sinking**
- 4  **How to avoid sinking**
- 5  **How to avoid sinking**
 - Float
 - Microscopic zooplankton have shells or tests
 - Radiolarians
 - Foraminifers
 - Copepods
- 6  **How to avoid sinking**
 - Float
 - Macroscopic zooplankton
 - Krill (resemble mini-shrimp or large copepods)
- 7  **How to avoid sinking**
 - Cnidarians
 - Hydrozoan (Portuguese man-of-war) gas-filled float
 - Scyphozoan (jellyfish) soft low-density bodies
- 8  **How to avoid sinking**
- 9  **Fin designs in fish**
 - Paired vertical fins as stabilizers
 - Paired pelvic fins and pectoral fins for “steering” and balance
 - Tail fin (caudal) for thrust
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- 10  **Fin designs in fish**
 - Rounded caudal fins flexible, maneuver at slow speeds
 - Truncate fins and forked fins, useful for both maneuvering and thrust
 - Lunate fins rigid, lots of thrust for fast swimmers
 - Heterocercal fins asymmetrical, lift for buoyancy (shark)
- 11  **Fin designs in fish**
- 12  **Adaptations for finding prey**
 - Mobility
 - Lungers wait for prey and pounce (grouper)
 - Mainly white muscle tissue
 - Cruisers actively seek prey (tuna)
 - Mostly red muscle tissue
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- 13  **Adaptations for finding prey**
 - Swimming speed
 - Speed generally proportional to size
 - Can move very fast for short time (mainly to avoid predation)
- 14  **Adaptations to finding prey**
 - Most fish cold-blooded but some are warm-blooded
 - Homeothermic-body temperature above sea water temperature
 - Modifications in circulatory system
 - Mainly in fast-swimming fish

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- 15  **Adaptations of deep-water nekton**
 - Mainly fish that consume detritus or each other
 - Lack of abundant food
 - Bioluminescence
 - Large, sensitive eyes
 - Large sharp teeth
 - Expandable bodies
 - Hinged jaws
- 16  **Adaptations of deep-water nekton**
- 17  **Adaptations to avoid predation**
 - Schooling
 - "Safety in numbers"
 - School may appear as single larger unit
 - Schooling maneuvers confuse predator
- 18  **Marine mammals**
 - Land-dwelling ancestors
 - Warm-blooded
 - Breathe air
 - Hair/fur
 - Bear live young
 - Mammary glands for milk
- 19  **Marine mammals**
 - Carnivora
 - Prominent canine teeth
 - Sea otters
 - Polar bears
 - Pinnepeds
 - Walruses
 - Seals
 - Sea lions
 - Fur seals
- 20  **Marine mammals**
 - Sirenia
 - Herbivores
 - Manatees
 - Coastal areas of tropical Atlantic Ocean
 - Dugongs
 - Coastal areas of Indian and western Pacific Oceans
- 21  **Marine mammals**
 - Cetacea
 - Whales, dolphins, porpoises
 - Stream-lined bodies for fast swimming
 - Specialized skin structure for fast swimming
- 22  **Cetacea**
 - Adaptations for deep diving
 - Use oxygen efficiently
 - Able to absorb 90% of oxygen inhaled
 - Able to store large quantities of oxygen
 - Able to reduce oxygen required for noncritical organs
 - Muscles insensitive to buildup of carbon dioxide

- Collapsible lungs
- 23 **Cetacea**
- 24 **Cetacea**
 - Suborder Odontoceti (toothed)
 - Dolphins, porpoises, killer whale, sperm whale
 - Echolocation to determine distance and direction to objects
 - Determine shape, size of objects
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- 25 **Intelligence in toothed whales**
 - Large brains relative to body size
 - Communicate with each other
 - Brains convoluted
 - Trainable
 - Are they intelligent?
- 26 **Cetacea**
 - Baleen whales
 - Blue whale, finback whale, humpback whale, gray whale, right whale
 - Fibrous plates of baleen sieve prey items
 - Vocalized sounds for various purposes
- 27 **Gray whale migration**
- 28 **Whales as endangered species**
 - Fewer whales now than before whaling
 - International Whaling Treaty
 - Hunting of gray whale banned in 1938
 - Gray removed from endangered list in 1993 as population rebounded
- 29 **End of CHAPTER 14**
Animals of the Pelagic Environment